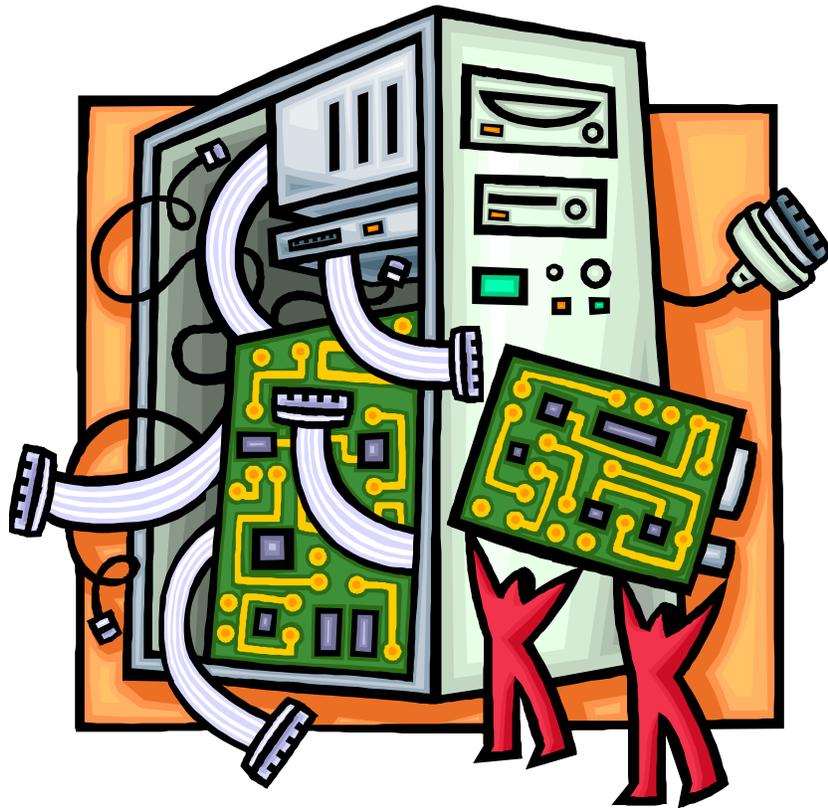


How to Build a Computer



By Peter Olsen

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There are many advantages to building your own computer from scratch. A custom-built computer is specifically designed with your particular needs in mind. This means that it contains only the components you want – nothing more, nothing less – and you know exactly what you are getting. You can mix and match parts to incorporate the best that each manufacturer has to offer. You can build your machine for a lower cost than an equivalent name brand. It will also be easier to upgrade than a factory-built machine.

In the process of building your own computer, you will learn a lot about computer hardware and how computers work in general. It will make you feel more in control of your machine by understanding how it was put together. You will also develop greater confidence after successfully troubleshooting problems. For technical support there are many helpful forums on the internet where you can get your questions answered, and most components come with a manufacturer's warranty.

Things to Do First

1. Decide what type of machine you want to build based on what you will be using it for. Various purposes include: word processing, web surfing, online courses, kids software, video editing, media center, high-end gaming, or a combination of the above.

2. Make a list of everything you will need. Here are the basics:

- Case
- Power Supply
- Motherboard
- Processor (CPU)
- Memory (RAM)
- Hard Drive(s)
- CD/DVD Drive(s)
- Video Card
- Sound Card
- Modem (An external modem may be supplied by your internet service provider.)
- Keyboard
- Mouse
- Speakers
- Monitor
- Operating System
- Battery Backup (recommended)

It is a good idea to have a long-term view when choosing your components, should you ever need to upgrade in the future. Pick a case that has extra bays if you want to add another drive at a later date. Make sure the case you decide to get is big enough to fit everything that you want to put in there, with plenty of air flow to keep it cool. (Next time I will consider investing in a full tower instead of a mid-size tower.)

3. Compare specifications, prices, reliability and compatibility of various parts offered by different manufacturers. It's actually better to buy a part that's six months old than to get the newest thing on the market. The price will have dropped by that time, any bugs will have been worked out, and there will be more information available on it.

4. Plan your budget. If your resources are limited, you will have to tailor your computer accordingly. Buy the best quality components that you can reasonably afford. Even if money is not an issue, it makes sense to choose parts that provide the most "bang for the buck." A top-of-the-line component could easily double the cost, while only marginally improving on the final result.

5. Purchase all of the parts. Be sure to shop around. Newegg.com usually has lower prices than Fry's Electronics, unless Fry's happens to have something on sale. Figure out if there will be any added costs such as sales taxes, shipping and handling. Look for manufacturer rebates, too, and don't forget to send them in.

Before You Get Started

1. Clear the area. You will need a large, flat, hard surface that is clean and dust-free with plenty of room to work, like a kitchen table or wood floor.

2. Create a static-free environment. Wear cotton clothing and keep a piece of wood nearby to touch before touching your computer. If you have an anti-static bag left over from your board or other components, just touch the inside surface of the bag with your hands. The bag will absorb any static you may have. The foam that the mother board was packed in is also very safe to use when working. Don't stand on carpet when working on your computer. Carpets, especially synthetic ones, produce lots of static. Synthetic materials such as polyester upholstery can cause static electricity when you get up, sit down, or move around. Leather-soled shoes generate less static than rubber soles. You're more likely to generate a static charge when the atmosphere is dry and less likely when it's humid.

3. Gather your tools. (Philips screwdriver, flathead screwdriver, long-nose pliers, flashlight, and a small shallow container to hold screws so they don't get lost.)

4. Unpack the boxes and make sure the contents are all there. (I discovered that one of my power supply cords was missing.)

5. Read the manuals. See if there is anything else you will need. (My computer building process came to a halt when I found out that the CPU didn't come with thermal paste, which required a long drive to go get some.) Keep the manuals handy, because you will have to refer to them from time to time as you are putting the machine together. When in doubt, always check the manual!



Step-by-Step Directions

Open up the case.



Put the case on its side.



Get out the motherboard. Place the motherboard I/O shield into the slot in the case.



Align the motherboard holes with the standoffs and screw it in.



Place the CPU in the CPU socket on the motherboard. Apply thermal paste to CPU.



Attach the CPU heat sink.



Put the power supply in.



Attach the wires from the case to the motherboard.



Put in your various cards (sound, video, modem). If your card requires extra power, attach the power cord to the power supply.



Put the hard drives into their bays, and attach the data cables to the motherboard, and the power cables to the power supply.



Put in the optical drives, and attach the data cables to the motherboard, and the power cables to the power supply.



Attach the power cord from the PSU to the wall.

Perform a boot test.



Unplug the computer.



Close up the case.



Put the computer in its place.



Plug in all external devices (monitor, keyboard, speakers, mouse, etc). Turn the computer on.



Look at all those cables!



Install the operating system and hardware drivers.



“OK, the test is over now. You win! Go back to the recovery annex for your cake!” Don’t forget to think of a cool name for your homemade computer. Mine is called the Xbolt PC.